



[Tokyo Westward Group Energy Alternatives 10 Wacky Forms of Alternative Energy](#)

[At Delft University of Technology in the Netherlands](#), researchers are working on a novel, albeit somewhat distasteful, alternative to fossil fuels. They've developed a state-of-the-art toilet for use in developing countries that employs microwaves to chemically alter human waste into syngas, a mixture of carbon monoxide and

hydrogen. This syngas can then be used in stacks of fuel cells to generate electricity. Hypothetically, one toilet could generate enough juice to power several village households, freeing them from dependence on coal or oil.

At first glance, Delft's scheme to turn poop into power may seem a bit daft. But drastic times call for drastic measures, and many people categorize the state of our environment as drastic. We live on a planet of finite resources -- some of which are crucial to our survival, and others that harm the environment every time we use them.

Rather than wait for the oil wells to run dry and coastal cities to disappear beneath rising sea levels, many people are looking ahead to cleaner alternative sources of energy. Some of these energy sources, like solar power, hybrid-electric vehicles and small, hand-powered gadgets have already caught on. Others, however, like feces-fueled water heaters, may take a little getting used to.

Here, for your reading enjoyment, are [10 of the wackier ideas for alternative energy](#). Some of them are already available; others need a few more trial runs before they hit the market. Either way, if you're reading this during a self-imposed Earth Hour, hand-crank your flashlight and prepare to be surprised -- or even amused.

**Muscle Power**

When you're at the gym, does your mind ever drift off to ponder the perils of the planet? Do you feel a bit of remorse as your legs pound away on an electric machine that goes nowhere, while the ice-cold air conditioner











## Kites Attached to Ocean-going Ships

Here's another alternative energy scheme that would be deployed in the middle of the ocean. While most of us landlubbers think of global warming as a problem caused by coal power plants and automobile exhaust, cargo ships plying the seas spew about 2.7 percent of the world's manmade greenhouse-gas emissions, according to the International Maritime Organization. That works out to about 870 million tons of climate-altering pollution.

Any technology that could help ships to reach their destinations without burning as much fuel would be a big plus. That's why in recent years some visionaries have been trying to revive wind power, a method of ship propulsion that saw its heyday in the mid-1800s, as a way to augment large cargo ships' carbon-burning engines. In the mid-2000s, one company proposed outfitting freighters with gigantic, 13,000-square-foot (1,207-square-meter) kites, which would fly a thousand or so feet (300 meters) above the ship and help pull it along. By one estimate, such a device could reduce a ship's consumption of diesel fuel by as much as 25 percent, which not only would significantly reduce its carbon output into the atmosphere, but possibly save in excess of \$1 million in fuel costs for the biggest ships annually.

In 2008, 10,000-ton container ship MS Beluga Skysails became the first to use auxiliary kite power, attaching a 160-square-meter (1,722-square-foot) kite 300 meters (984.2 feet) above its bow on a voyage from a German port to Venezuela. The ship managed to cut its diesel fuel expenditures by 10 to 15 percent, and saved between \$1,000 and \$1,500 per day in the course of the two-week trip. The Beluga Group, the ship's parent company, hopes to eventually use kites to slash its fuel bills by 20 percent.

## Super Small Nuclear Reactors

You've heard of tenants getting eviction notices for not paying rent or for making too much noise. But in 2011, a 31-year-old Swedish man named Richard Handl became possibly the first apartment renter in history to get in hot water with his landlord for trying to build a nuclear reactor in his kitchen.

Handl, who told a local newspaper that he'd been interested in nuclear physics since his was in his teens, spent about \$950 to acquire the parts and materials he needed to build a DIY nuke, and amassed the necessary quantity of radium by buying luminous clock hands on eBay for a few bucks apiece. He also extracted thorium oxide, another ingredient, from Coleman gas lanterns, and built a crude neutron gun by inserting a small glass pipe inside a plastic pill bottle and covering it with lead. (In case anyone else wanted to emulate him, Handl dutifully documented all these details in his "Richard's Reactor" blog.) But when the



## Orbiting Mirrors to Transmit Solar Energy

You've probably witnessed the glee children experience when they see their reflection in one of those shiny mirrored balloons that are popular at birthday parties. Now, imagine an array of enormous versions of those party balloons -- perhaps as large as a mile in diameter -- deployed in geostationary orbit around Earth. Could they provide a possible answer to the world's energy shortage and climate-change woes?

In a 2007 article, the late Massachusetts Institute of Technology engineering professor William F. Schreiber proposed launching into orbit a fleet of such balloons, which would be activated by remote control to unfold and inflate. As the Earth's position changed with respect to the sun, the spherical mirrors would be adjusted continuously to catch and focus solar energy and transmit it in concentrated beams to receiving stations on Earth. At those receiving stations, that solar energy would be used to heat water into steam and drive turbines to generate electricity.

"The balloon approach is very attractive because it enables focus to be controlled by pressure [inside the balloon], rather than by making and then placing into orbit a very precise mirror," Schreiber wrote [source: Schreiber]. While Schreiber's idea for using giant shiny balloons may sound a bit outré, scientists increasingly have been looking at the possibility of using satellites to harvest solar power and transmit it to Earth. A study group from the Paris-based International Academy of Astronautics recently proclaimed: "It is clear that solar power delivered from space could play a tremendously important role in meeting the global need for energy during the 21st Century." And U.S. Air Force Col. Michael Smith, the director of the Pentagon's Center for Strategy and Technology, recently noted that the concept has the potential to supply safe, clean energy to the entire planet "if we can make it work".